CLAIMS

What is claimed is:

1. A recombinant nucleic acid sequence comprising:
a plastid construct comprising,
at least one DNA sequence, and
at least two recombining sites.

2. The recombinant nucleic acid sequence according to Claim 1,
wherein said at least one DNA sequence is a first DNA sequence and a second DNA sequence, and
wherein said recombining sites are positioned between said first and said second DNA sequences.

3. The recombinant nucleic acid sequence according to Claim 1,
wherein said at least two recombining sites is a first recombining site and a second recombining site, and
wherein said at least one DNA sequence is positioned between said first and said second recombining sites.

4. The recombinant nucleic acid construct according to Claim 1,
wherein each of said recombining sites are selected from the group consisting of Lox, FRT, and R.

5. The recombinant nucleic acid construct according to Claim 1, further comprising regions of homology for integration into the plastid genome.

6. A plant cell comprising the construct according to Claim 1.

7. A plant comprising the plant cell according to Claim 6.

8. A recombinant nucleic acid construct comprising, in the 5' to 3' direction of transcription:

a transcriptional initiation region functional in a plant cell, an organelle targeting sequence, and a nucleic acid sequence encoding recombinase.

9. The recombinant nucleic acid construct according to Claim 8, wherein said transcriptional initiation region is selected from the group consisting of a transcriptional initiation region functional during zygote formation, and a transcriptional initiation region functional during seed germination.

10. The recombinant nucleic acid construct according to Claim 8, wherein said targeting sequence directs the recombinase to the plant cell plastid.

11. The recombinant nucleic acid construct according to Claim 8, wherein said recombinase is a bacteriophage P1 Cre recombinase.

12. A method for the production of a plant having transformed plastids, comprising:

introducing into a plant cell a first recombinant DNA sequence comprising a plastid construct comprising at least one DNA sequence, and at least two recombining sites,

providing a recombinase to said plant cells, and

regenerating a plant having at least one plant cell containing said first DNA construct.

13. The method according to Claim 12, wherein said recombinase is provided to said plant cells by introducing a second recombinant comprising:

a transcriptional initiation region, an organelle targeting region, and a nucleic acid sequence encoding recombinase.

14. The method according to Claim 12,

wherein said at least one DNA sequence is a first DNA sequence and a second DNA sequence, and

wherein said recombining sites are positioned between said first and said second DNA sequences.

15. The method according to Claim 12,

wherein said at least two recombining sites is a first recombining site and a second recombining site, and

wherein said at least one DNA sequence is positioned between said first and said second recombining sites.

16. The method according to Claim 15, wherein said first and said second recombining sites are parallel, i.e., in directly repeated orientation.

17. The method according to Claim 16, whereby excision of the DNA sequence located between said first and said second recombining sites occurs.

18. The method according to Claim 17, wherein said DNA sequence encodes a selectable marker.

19. The method according to Claim 18, further comprising introducing a third construct into a plant cell obtained from said regenerated plant.

20. The method according to Claim 12,

wherein each of said recombining sites are selected from the group consisting of Lox, FRT, and R.

21. The recombinant nucleic acid construct according to Claim 12, further comprising regions of homology for integration into the plastid genome.

22. A plant cell produced according to method of Claim 12.

23. A plant comprising the plant cell produced according to Claim 22.

24. A method for retransforming a plant cell plastid comprising:

introducing into a plant cell a first recombinant DNA sequence comprising a plastid construct comprising at least one DNA sequence, and at least two recombining sites,

providing a recombinase to said plant cells,

regenerating a plant having at least one plant cell containing said first DNA construct, and

introducing a second construct into said plants obtained from said regenerated plant.

25. The method according to Claim 24, wherein said recombinase is provided to said plant cells by introducing a third recombinant comprising:

a transcriptional initiation region, an organelle targeting region, and a nucleic acid sequence encoding recombinase.

26. The method according to Claim 24,

wherein said at least one DNA sequence is a first DNA sequence and a second DNA sequence, and

wherein said recombining sites are positioned between said first and said second DNA sequences.

27. The method according to Claim 24,

wherein said at least two recombining sites is a first recombining site and a second recombining site, and

wherein said at least one DNA sequence is positioned between said first and said second recombining sites.

28. The method according to Claim 27, wherein said first and said second recombining sites are parallel, i.e., in directly repeated orientation.

29. The method according to Claim 28, whereby excision of the DNA sequence located between said first and said second recombining sites occurs.

30. The method according to Claim 29, wherein said DNA sequence encodes a selectable marker.

31. The method according to Claim 30, further comprising introducing a third construct into a plant cell obtained from said regenerated plant.

32. The method according to Claim 24,
wherein each of said recombining sites are selected from the group consisting of Lox, FRT, and R.

33. The recombinant nucleic acid construct according to Claim 24, further comprising regions of homology for integration into the plastid genome.

34. A plant cell produced according to method of Claim 24.

35. A plant comprising the plant cell produced according to Claim 34.